



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/715,424  | 11/19/2003  | Jae-Bon Koo          | 6161.0113.US        | 5329             |
| 23345   | 7590        | 08/18/2004           | EXAMINER            |                  |
| MCGUIREWOODS, LLP<br>1750 TYSONS BLVD<br>SUITE 1800<br>MCLEAN, VA 22102 |             |                      | WILSON, SCOTT R     |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2826                |                  |

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                   |  |
|------------------------------|--------------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/715,424 | <b>Applicant(s)</b><br>KOO ET AL. |  |
|                              | <b>Examiner</b><br>Scott R. Wilson   | <b>Art Unit</b><br>2826           |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/19/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitnaga et al..

Mitnaga et al., Figures 5A – 5C, discloses two embodiments of a TFT, used in flat-panel displays.

Figure 5A discloses (col. 14, lines 33-34) a source region (208), channel region (209) and drain region (210), which is shown in two configurations in Figures 5B and 5C. In 5B, the crystal is grown so that the grain boundaries are parallel to the carrier flow (col. 14, lines 65-67), the carriers therefore having high mobility (col. 15, lines 6-8), and in Figure 5C, the grain boundaries are perpendicular to the carrier flow (col. 15, lines 21-24), so that the carriers have a low mobility (col. 15, lines 30-31). Mitnaga et al. further discloses that the two TFT's may be used in the same LCD pixel, the display TFT, which is within the scope of applicants driving transistor, having lower mobility, and small leakage current (col. 15, lines 40-42), and the peripheral TFT, which is within the scope of applicants switching transistor, having high mobility (col. 15, lines 50-52).

Claims 1-3 are further rejected under 35 U.S.C. 102(b) as being anticipated by Takemura.

Takemura, Figure 2, discloses (col. 5, lines 30-46) a device in which TFT's are formed with crystal grains either perpendicular or parallel to the carrier current direction, thereby effecting the on-current and mobility (col. 5, lines 44-46). The two types of TFT are then formed in an active matrix LCD (col. 4, lines 34-42), where the high mobility TFT is used in the peripheral circuit, which is within the scope of applicants switching transistor, and the low mobility TFT is used in the pixel portion, which is within the scope of applicants driving transistor.

***Allowable Subject Matter***

Claims 4-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses a light emitting device comprising a switching and driving thin film transistor which have different average sizes of the crystal grains. The closest prior art, Mitnaga et al., forms the crystal grains of the switching and driving transistors either parallel or perpendicular to the carrier current direction, but it does not teach varying the average crystal size between then two configurations.

Claims 8-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses a light emitting device comprising a switching and driving thin film transistor which have different shapes of the crystal grains. The closest prior art, Mitnaga et al., forms the crystal grains of the switching and driving transistors either parallel or perpendicular to the carrier current direction, but it does not teach varying the crystal shapes between then two configurations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/715,424

Page 4

Art Unit: 2826

srw

August 4, 2004

  
NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800